

SEQUENCE LISTING

SEQ ID NO: 1

LENGTH: 1447

TYPE: nucleic acid

5 STRANDEDNESS: single

. TOPOLOGY: linear

MOLECULE TYPE: DNA

SEQUENCE DESCRIPTION:

GAATTCGGG AACGAATAAT TATTATTAGC AATTATTAGC GATCAATAAT CTTGATCACA TT 62
 10 ATG GCA AGC ACT ATT AAG GAA GCA TTA TCA GTG GTG AGT GAA GAC CAG 110
 TOC TTG TTT GAG TGT GCC TAC GGA TCG CCC CAC CTT GCA AAG ACA GAA 158
 ATG ACA GCC TOC TCT TOC AGT GAA TAT GGG CAA ACA TCA AAG ATG AGC 206
 CCG CGC GGT CCC CAG CAG GAC TGG TTA TCA CAG CCC CCG GGC AGA GGT 254
 ACC ATT AAG ATG GAG TGT AAC CCA AAC CAG GGT AAT GGG TCA AGG AAT 302
 15 TCA OCT GAT GAC TGC AGC GTG GCA AAA GGA GGG AAA ATG GGT AGC AGT 350
 TCA GAC AAT GGT GGG ATG AAC TAT GGA AGC TAC ATG GAA GAG AAG CAT 398
 ATT CCG OCT CCA AAT ATG ACA ACC AAT GAA CGA AGA GGT ATT GTG CCA 446
 GCA GAT OCT ACG TTA TGG AGC ACA GAC CAT GTA CCG CAG TGG CTG GAG 494
 TGG GCA GTG AAG GAG TAT GGT CTT CCA GAC GTG GAC ATC TTG TTG TTC 542
 20 CAG AAC ATT GAT GGG AAA GAG TTG TGT AAA ATG ACC AAA GAT GAC TTC 590
 CAG AGA CTC ACG CCG AGC TAT AAC GCA GAT ATC CTC CTG TCA CAC CTA 638
 CAC TAC CTC AGA GAG AGA GGA GGC ACT TTT ATT TTT CCA AAT ACA TCA 686
 GGT TAC CCA GAA GCA ACG CAA AGA ATA ACA ACA AGG CCA GAT TTA OCT 734
 TAT GAG CAA GCG AGG AGA TCA GCG TGG ACG AGT CAC AGC CAT CCC ACT 782
 25 CAG TCA AAA GCT ACC CAA CCA TCA TCT TCA ACA GTG CCC AAA ACA GAA 830
 GAC CAG GGT OCT CAG TTA GAT OCT TAT CAG ATT CTT GGA CCG ACC AGC 878

AGC CGT CTT GCA AAT CCA GGG AGT GGG CAG ATA CAG CTA TGG CAG TTC 926
 CTA CTG GAG CTT CTG TCG GAC AGC TOC AAC TOC AAC TGC ATC ACC TGG 974
 GAG GGC ACA AAT GGG GAG TTC AAG ATG ACA GAC OCT GAT GAA GIG GCT 1022
 CGG CGT TGG GGA GAG AGG AAA AGC AAA OCT AAC ATG AAC TAT GAC AAA 1070
 5 CTC AGC CGT GCA CTT CGC TAC TAC TAT GAC AAA AAT ATT ATG ACT AAA 1118
 GTT CAT GGT AAA CGC TAT GOC TAC AAA TTT GAT TTC CAC GGA ATC GCT 1166
 CAG GOC CTC CAG OCT CAC OCT CCA GAA TCA TOC ATG TAC AAA TAC CCA 1214
 TCA GAC CTC OCC TAC ATG AGT TOC TAC CAT GCA CAC OCC CAG AAG ATG 1262
 AAC TTT GTA GCT OCC CAT OCC OCT GCT TTG OCC GTA ACC TCA TOC AGC 1310
 10 TTT TTT GCT GOC OCT AAT CCA TAC TGG AAT TCA CCA ACT GGA GGC ATC 1358
 TAC OCC AAT ACC AGG CTG CCA GCT GCT CAT ATG OCT TOC CAT CTT GGC 1406
 ACC TAC TAC TAA GIG GGGAAAGAAA GAAAGOGCCA AGAAAA 1447

15 SEQ ID NO: 2
 LENGTH: 451
 TYPE: amino acid
 TOPOLOGY: linear
 MOLECULE TYPE: peptide
 20 SEQUENCE DESCRIPTION:

Met Ala Ser Thr Ile Lys Glu Ala Leu Ser Val Val Ser Glu Asp Gln 16
 Ser Leu Phe Glu Cys Ala Tyr Gly Ser Pro His Leu Ala Lys Thr Glu 32
 25 Met Thr Ala Ser Ser Ser Ser Glu Tyr Gly Gln Thr Ser Lys Met Ser 48
 Pro Arg Val Pro Gln Gln Asp Trp Leu Ser Gln Pro Pro Ala Arg Val 64

	Thr Ile Lys Met Glu Cys Asn Pro Asn Gln Val Asn Gly Ser Arg Asn	80
	Ser Pro Asp Asp Cys Ser Val Ala Lys Gly Gly Lys Met Val Ser Ser	96
	Ser Asp Asn Val Gly Met Asn Tyr Gly Ser Tyr Met Glu Glu Lys His	112
	Ile Pro Pro Pro Asn Met Thr Thr Asn Glu Arg Arg Val Ile Val Pro	128
5	Ala Asp Pro Thr Leu Trp Ser Thr Asp His Val Arg Gln Trp Leu Glu	144
	Trp Ala Val Lys Glu Tyr Gly Leu Pro Asp Val Asp Ile Leu Leu Phe	160
	Gln Asn Ile Asp Gly Lys Glu Leu Cys Lys Met Thr Lys Asp Asp Phe	176
	Gln Arg Leu Thr Pro Ser Tyr Asn Ala Asp Ile Leu Leu Ser His Leu	192
	His Tyr Leu Arg Glu Arg Gly Ala Thr Phe Ile Phe Pro Asn Thr Ser	208
10	Val Tyr Pro Glu Ala Thr Gln Arg Ile Thr Thr Arg Pro Asp Leu Pro	224
	Tyr Glu Gln Ala Arg Arg Ser Ala Trp Thr Ser His Ser His Pro Thr	240
	Gln Ser Lys Ala Thr Gln Pro Ser Ser Ser Thr Val Pro Lys Thr Glu	256
	Asp Gln Arg Pro Gln Leu Asp Pro Tyr Gln Ile Leu Gly Pro Thr Ser	272
	Ser Arg Leu Ala Asn Pro Gly Ser Gly Gln Ile Gln Leu Trp Gln Phe	288
15	Leu Leu Glu Leu Leu Ser Asp Ser Ser Asn Ser Asn Cys Ile Thr Trp	304
	Glu Gly Thr Asn Gly Glu Phe Lys Met Thr Asp Pro Asp Glu Val Ala	320
	Arg Arg Trp Gly Glu Arg Lys Ser Lys Pro Asn Met Asn Tyr Asp Lys	336
	Leu Ser Arg Ala Leu Arg Tyr Tyr Tyr Asp Lys Asn Ile Met Thr Lys	352
	Val His Gly Lys Arg Tyr Ala Tyr Lys Phe Asp Phe His Gly Ile Ala	368
20	Gln Ala Leu Gln Pro His Pro Pro Glu Ser Ser Met Tyr Lys Tyr Pro	384
	Ser Asp Leu Pro Tyr Met Ser Ser Tyr His Ala His Pro Gln Lys Met	400
	Asn Phe Val Ala Pro His Pro Pro Ala Leu Pro Val Thr Ser Ser Ser	416
	Phe Phe Ala Ala Pro Asn Pro Tyr Trp Asn Ser Pro Thr Gly Gly Ile	432
	Tyr Pro Asn Thr Arg Leu Pro Ala Ala His Met Pro Ser His Leu Gly	448
25	Thr Tyr Tyr	451

SEQ ID NO: 3

LENGTH: 1528

TYPE: nucleic acid

STRANDEDNESS: single

5 TOPOLOGY: linear

MOLECULE TYPE: DNA

SEQUENCE DESCRIPTION:

10 GAATTCGCG AACGAATAAT TATTATTAGC AATTATTAGC GATCAATAAT CTGATCACA TT 62
 ATG GCA AGC ACT ATT AAG GAA GCA TTA TCA GIG GIG AGT GAA GAC CAG 110
 TCC TTG TTT GAG TGT GCC TAC GGA TCG CCC CAC CTT GCA AAG ACA GAA 158
 ATG ACA GCC TCC TCT TCC AGT GAA TAT GGG CAA ACA TCA AAG ATG AGC 206
 CCG CGC GGT CCC CAG CAG GAC TGG TTA TCA CAG CCC CCG GGC AGA GGT 254
 15 ACC ATT AAG ATG GAG TGT AAC CCA AAC CAG GTT AAT GGG TCA AGG AAT 302
 TCA CCT GAT GAC TGC AGC GIG GCA AAA GGA GGG AAA ATG GGT AGC AGT 350
 TCA GAC AAT GGT GGG ATG AAC TAT GGA AGC TAC ATG GAA GAG AAG CAT 398
 ATT CCG CCT CCA AAT ATG ACA ACC AAT GAA CGA AGA GGT ATT GIG CCA 446
 GCA GAT CCT ACG TTA TGG AGC ACA GAC CAT GTA CCG CAG TGG CTG GAG 494
 20 TGG GCA GIG AAG GAG TAT GGT CTT CCA GAC GIG GAC ATC TTG TTG TTC 542
 CAG AAC ATT GAT GGG AAA GAG TTG TGT AAA ATG ACC AAA GAT GAC TTC 590
 CAG AGA CTC ACG CCG AGC TAT AAC GCA GAT ATC CTC CTG TCA CAC CTA 638
 CAC TAC CTC AGA GAG ACT OCT CTT CCA CAT TTG ACT TCA GAT GAT GGT 686
 GAT AAG GCC TTA CAA AAC TCT CCA CCG TTA ATG CAT GCT AGA AAC ACA 734
 25 GGA GGA GGC ACT TTT ATT TTT CCA AAT ACA TCA GTT TAC CCA GAA GCA 782
 ACG CAA AGA ATA ACA ACA AGG CCA GAT TTA CCT TAT GAG CAA GCG AGG 830

5 AGA TCA GCG TGG ACG AGT CAC AGC CAT CCC ACT CAG TCA AAA GCT ACC 878
 CAA CCA TCA TCT TCA ACA GTG CCC AAA ACA GAA GAC CAG CGT CCT CAG 926
 TTA GAT OCT TAT CAG ATT CTT GGA CCG ACC AGC AGC CGT CTT GCA AAT 974
 CCA GGG AGT GGG CAG ATA CAG CTA TGG CAG TTC CTA CTG GAG CTT CTG 1022
 TCG GAC AGC TCC AAC TCC AAC TGC ATC ACC TGG GAG GGC ACA AAT GGG 1070
 GAG TTC AAG ATG ACA GAC OCT GAT GAA GTG GCT CCG CGT TGG GGA GAG 1118
 AGG AAA AGC AAA CCT AAC ATG AAC TAT GAC AAA CTC AGC CGT GCA CTT 1166
 CGC TAC TAC TAT GAC AAA AAT ATT ATG ACT AAA GTT CAT GGT AAA CGC 1214
 TAT GCC TAC AAA TTT GAT TTC CAC GGA ATC GCT CAG GCC CTC CAG OCT 1262
 10 CAC OCT CCA GAA TCA TCC ATG TAC AAA TAC CCA TCA GAC CTC CCC TAC 1310
 ATG AGT TCC TAC CAT GCA CAC CCC CAG AAG ATG AAC TTT GTA GCT CCC 1358
 CAT CCC OCT GCT TTG CCC GTA ACC TCA TCC AGC TTT TTT GCT GCC OCT 1406
 AAT CCA TAC TGG AAT TCA CCA ACT GGA GGC ATC TAC CCC AAT ACC AGG 1454
 CTG CCA GCT GCT CAT ATG OCT TCC CAT CTT GGC ACC TAC TAC TAA GTG 1502
 15 GGGAAAGAAA GAAAGCGCCA AGAAAA 1528

SEQ ID NO: 4

LENGTH: 478

20 TYPE: amino acid

TOPOLOGY: linear

MOLECULE TYPE: peptide

SEQUENCE DESCRIPTION:

25

Met Ala Ser Thr Ile Lys Glu Ala Leu Ser Val Val Ser Glu Asp Gln 16

Ser Leu Phe Glu Cys Ala Tyr Gly Ser Pro His Leu Ala Lys Thr Glu 32
 Met Thr Ala Ser Ser Ser Ser Glu Tyr Gly Gln Thr Ser Lys Met Ser 48
 Pro Arg Val Pro Gln Gln Asp Trp Leu Ser Gln Pro Pro Ala Arg Val 64
 Thr Ile Lys Met Glu Cys Asn Pro Asn Gln Val Asn Gly Ser Arg Asn 80
 5 Ser Pro Asp Asp Cys Ser Val Ala Lys Gly Gly Lys Met Val Ser Ser 96
 Ser Asp Asn Val Gly Met Asn Tyr Gly Ser Tyr Met Glu Glu Lys His 112
 Ile Pro Pro Pro Asn Met Thr Thr Asn Glu Arg Arg Val Ile Val Pro 128
 Ala Asp Pro Thr Leu Trp Ser Thr Asp His Val Arg Gln Trp Leu Glu 144
 Trp Ala Val Lys Glu Tyr Gly Leu Pro Asp Val Asp Ile Leu Leu Phe 160
 10 Gln Asn Ile Asp Gly Lys Glu Leu Cys Lys Met Thr Lys Asp Asp Phe 176
 Gln Arg Leu Thr Pro Ser Tyr Asn Ala Asp Ile Leu Leu Ser His Leu 192
 His Tyr Leu Arg Glu Thr Pro Leu Pro His Leu Thr Ser Asp Asp Val 208
 Asp Lys Ala Leu Gln Asn Ser Pro Arg Leu Met His Ala Arg Asn Thr 224
 Gly Gly Ala Thr Phe Ile Phe Pro Asn Thr Ser Val Tyr Pro Glu Ala 240
 15 Thr Gln Arg Ile Thr Thr Arg Pro Asp Leu Pro Tyr Glu Gln Ala Arg 256
 Arg Ser Ala Trp Thr Ser His Ser His Pro Thr Gln Ser Lys Ala Thr 272
 Gln Pro Ser Ser Ser Thr Val Pro Lys Thr Glu Asp Gln Arg Pro Gln 288
 Leu Asp Pro Tyr Gln Ile Leu Gly Pro Thr Ser Ser Arg Leu Ala Asn 304
 Pro Gly Ser Gly Gln Ile Gln Leu Trp Gln Phe Leu Leu Glu Leu Leu 320
 20 Ser Asp Ser Ser Asn Ser Asn Cys Ile Thr Trp Glu Gly Thr Asn Gly 336
 Glu Phe Lys Met Thr Asp Pro Asp Glu Val Ala Arg Arg Trp Gly Glu 352
 Arg Lys Ser Lys Pro Asn Met Asn Tyr Asp Lys Leu Ser Arg Ala Leu 368
 Arg Tyr Tyr Tyr Asp Lys Asn Ile Met Thr Lys Val His Pro Pro Glu 384
 Ser Ser Met Tyr Lys Tyr Pro Ser Asp Leu Pro Tyr Met Ser Ser Tyr 400
 25 His Gly Lys Arg Tyr Ala Tyr Lys Phe Asp Phe His Gly Ile Ala Gln 416
 Ala Leu Gln Pro His Ala His Pro Gln Lys Met Asn Phe Val Ala Pro 432

His Pro Pro Ala Leu Pro Val Thr Ser Ser Ser Phe Phe Ala Ala Pro 448
 Asn Pro Tyr Trp Asn Ser Pro Thr Gly Gly Ile Tyr Pro Asn Thr Arg 464
 Leu Pro Ala Ala His Met Pro Ser His Leu Gly Thr Tyr Tyr 478

5

SEQ ID NO: 5

LENGTH: 23

TYPE: nucleic acid

STRANDEDNESS: single

TOPOLOGY: linear

MOLECULE TYPE: DNA

SEQUENCE DESCRIPTION:

ATCTTGATCA CATTATGCCA AGC 23

10

15

SEQ ID NO: 6

LENGTH: 25

TYPE: nucleic acid

STRANDEDNESS: single

TOPOLOGY: linear

20

MOLECULE TYPE: DNA

SEQUENCE DESCRIPTION:

CACATTATGG CAAGCACTAT TAAGG 25

25

SEQ ID NO: 7

LENGTH: 25

TYPE: nucleic acid

